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ABSTRACT

This report represents a detailed summation of existing workforce levels, training programs, career potential, and staff level projections through 1981 for EPA Region II. This region serves the states of New York and New Jersey and also includes the Commonwealth of Puerto Rico and the Virgin Islands. The specific pollution programs considered include air, noise, pesticides, potable water, radiation, solid waste, and wastewater. Additionally, a section overviewing current activities in energy as it relates to pollution control and abatement is included. The content of each section is limited to the control authority which EPA possesses. The study was undertaken to provide a strategy for supporting and implementing environmental education and career training programs based on needs and growth trends evidenced by the initial workforce assessment. A selected bibliography is included for reference. (CS)

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ED147174

A National Environmental/Energy Workforce Assessment

REGION II

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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SE 023 352

NATIONAL ENVIRONMENTAL/ENERGY

WORKFORCE ASSESSMENT

for

REGION II

Conducted by:

NATIONAL FIELD RESEARCH CENTER, INC

Under Grant from:

UNITED STATES

ENVIRONMENTAL PROTECTION AGENCY

Grant #T900591010

1977

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PREFACE

This regional report represents a detailed summation of existing workforce levels, training and certification programs, career potential, and staffing level projections through 1981 for EPA Region II Headquarters. It also examines the seven areas of pollution control and abatement activities (air, noise, pesticides, potable water, radiation, solid waste, and wastewater) over which EPA has varying degrees of statutory authority. The study was undertaken by National Field Research Center to provide the Office of Federal Activities (OFA) of the EPA with a strategy for supporting and implementing educational and occupational programs based on those needs and growth trends evidenced from the initial workforce assessment designated as Phase I of a three phase program.

The information presented in this regional report was compiled mainly through personal interviews with program administrators as well as various planning documents supplied by them. Where actual long term workforce planning had not been approached by a specific program, the individuals interviewed were requested to speculate, within the realm of their best professional judgement, on what they realistically perceived their workforce increases would be over the next five years.

FOREWORD

The following report represents five year projections for staffing levels of the seven major pollution control and abatement programs within EPA Region II. Individual narrative abstracts of training, workforce profiles and projections, and career potential are addressed within each program with a final remark included in each section to provide a brief overview. The specific pollution programs considered by this study come under the regulatory auspices of EPA and include air, noise, pesticides, potable water, radiation, solid waste and wastewater. The content of each program section in this report is limited to the control authorities which EPA possesses. Additionally, this report includes summaries of federal energy-related programs pertaining to Region II which have significant activities addressing the problems of polluting by-products of energy generation and transmission.

It must be noted that all the regulatory programs of EPA Region II are not segregated into autonomous sections. In fact, various functions overlap; interdivisional responsibilities exist; and certain components of all pollution activities are integrated into central support program to avoid duplication. Examples of these centralized service programs include the Enforcement Division, the Surveillance and Analysis Division, and the Management Division which perform similar tasks for each of the pollution control programs yet remain independent.

A large portion of the information contained in this Regional report represents the best professional judgments of those persons surveyed. In cases where more than one person provided judgments concerning expected real workforce growth in a specific program area, the resultant projections were determined by National Field Research Center staff through a step-by-step comparative analysis of all planning documents as well as all data collected during interviews.

National Environmental Energy
Workforce Assessment

Phase I

REGION II

Report

REGIONAL PROFILE

Region II is comprised of a combination of states and territories which is almost certain to qualify it as the most diverse of the federal regions. The region's two states, New York and New Jersey, are two of the largest (in terms of population) and most heavily industrial of the fifty states. They share many of the environmental and economic porblems of the northeast, and their problems and solutions interact with those of neighboring states.

The region also contains the Commonwealth of Puerto Rico and the Virgin Islands, a U.S. Trust Territory, both located in the West Indies about 1,200 miles southeast of the U.S. mainland. The total population of both these areas is little more than that of Brooklyn, New York. In contrast to the larger states, Puerto Rico and the Virgin Islands are more agriculturally oriented rather than highly industrialized. Since they are islands, their environmental problems have a much smaller impact on their neighbors.

The environmental problems of New York and New Jersey span the entire range of environmental program areas, with a high concentration in air and water pollution. This is largely due to high traffic densities and chemical industries in the areas. There is an acute awareness of the need for environmental protection in these states, and New York has been in the forefront of pollution control and abatement activities for years. New Jersey has also recognized the needs in this area and is budgeting its resources to meet them. This same awareness is not evident in Puerto Rico and the Virgin Islands.

They are literally years behind in pollution control and abatement, and an effort is currently underway by EPA to bring these areas up to an acceptable standard.

Organizational and Operational Structure

EPA Region II office in New York City is responsible for accomplishing the nation's environmental program objectives in a four-state/territorial region which includes New York, New Jersey, Puerto Rico and the Virgin Islands. These objectives include the development and implementation of a comprehensive and integrated program of environmental protection activities. The Regional Office works with EPA Headquarters staff in Washington, D.C., to translate program direction and evaluation into effective operating programs in the region. The office also provides assistance to the states in developing environmental plans and has the authority to approve state standards and implementation plans.

The Region II office differs from the other nine regional offices in its organization. The Regional Office was allowed by EPA Headquarters to devise its own organizational structure as an experiment and it has worked well. As a result, they have been allowed to continue on a permanent basis.

The regional office is broken down into five operational divisions plus the Office of the Regional Administrator. The personnel working in the environmental program areas used in this report are located primarily in the Environmental Programs, Facilities Technology, and Surveillance and Analysis Divisions. Additionally, the Enforcement Division provides legal services to the environmental programs, chiefly air and water. The Management Division provides

administrative support services to the programs and has a number of persons assigned to it who work in an individual program area.

The Environmental Programs Division contains six branches: Pesticides, Water Supply, Environmental Impacts, Water Programs, Air Programs, and Solid Waste. Each branch is responsible in its own area for providing technical and program assistance to state and local agencies, reviewing grant applications, state plans, and environmental impact statements and coordination of activities at the state and local level.

The Facilities Technology Division contains a Water Facilities Branch and an Air Facilities Branch. The Water Facilities Branch develops conditions for the National Pollutant Discharge Elimination System (NPDES) permits and reviews them and provides technological support for water enforcement actions. The Air Facilities Branch provides technical support for air enforcement actions and assists state agencies in carrying out implementation plans.

Within the Surveillance and Analysis Division there is an air monitoring section which investigates and studies ambient air quality and conducts air emission source testing. The Division also contains a pesticides chemistry section which provides analytical support for the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) for Federal Regions I, II, III, and V.

The following table depicts the 1976 staffing level and projected growth rate to 1982 for EPA Region II:

TABLE I

U.S. EPA REGION II

Current (1976) Staffing Level

Position	1976	Anticipated %/annum growth to 1982 (avg.)
Administrative	44	4%
Professional	233	7%
Technical	21	19%
Clerical	90	4%
TOTAL	388	

Figure 1 ORGANIZATION OF THE MANAGEMENT DIVISION

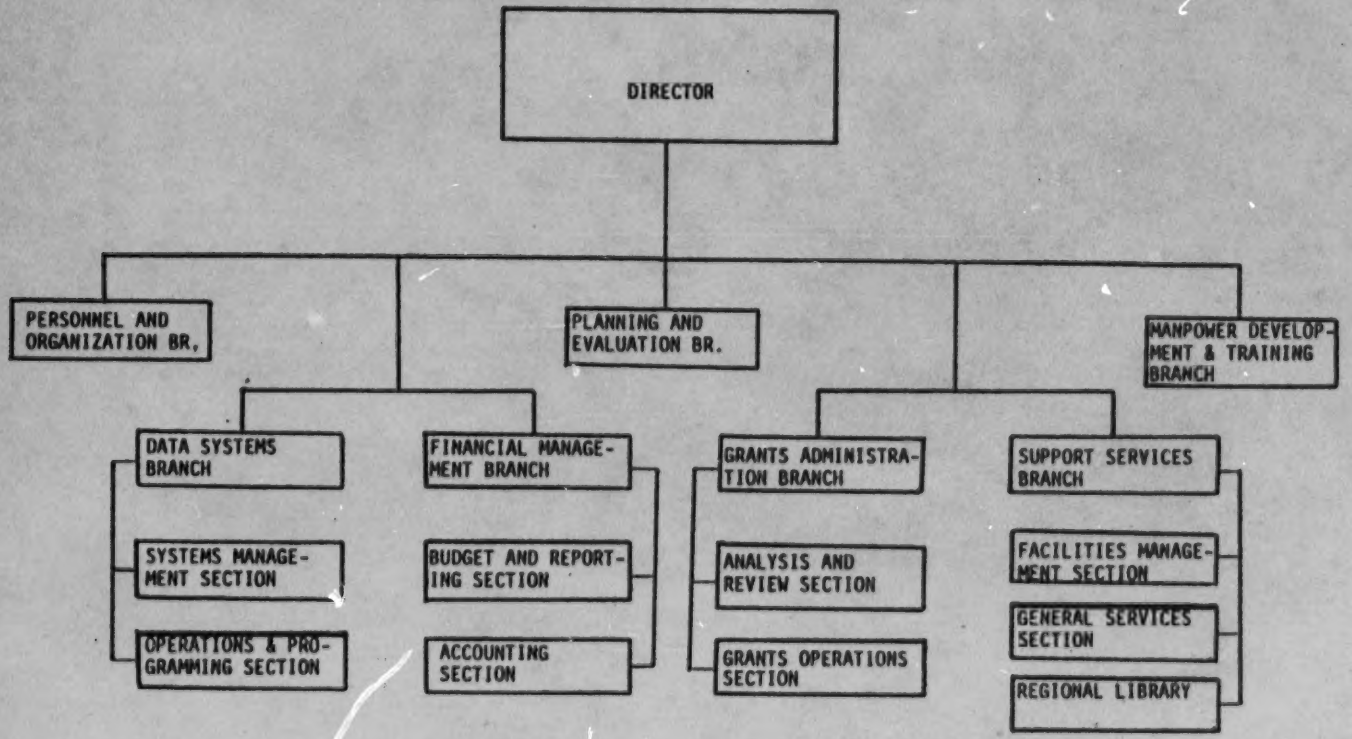


Figure 2 ORGANIZATION OF THE ENVIRONMENTAL PROGRAMS DIVISION

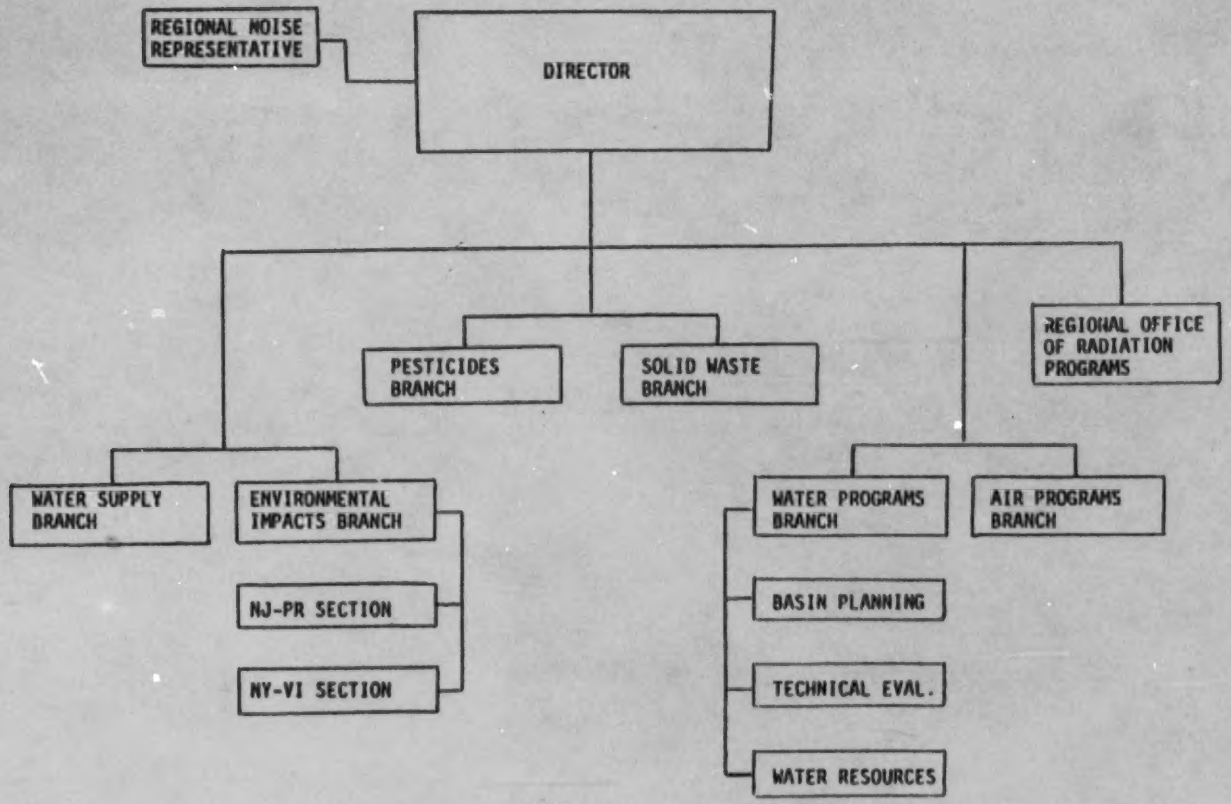


Figure 3 ORGANIZATION OF THE SURVEILLANCE AND ANALYSIS DIVISION

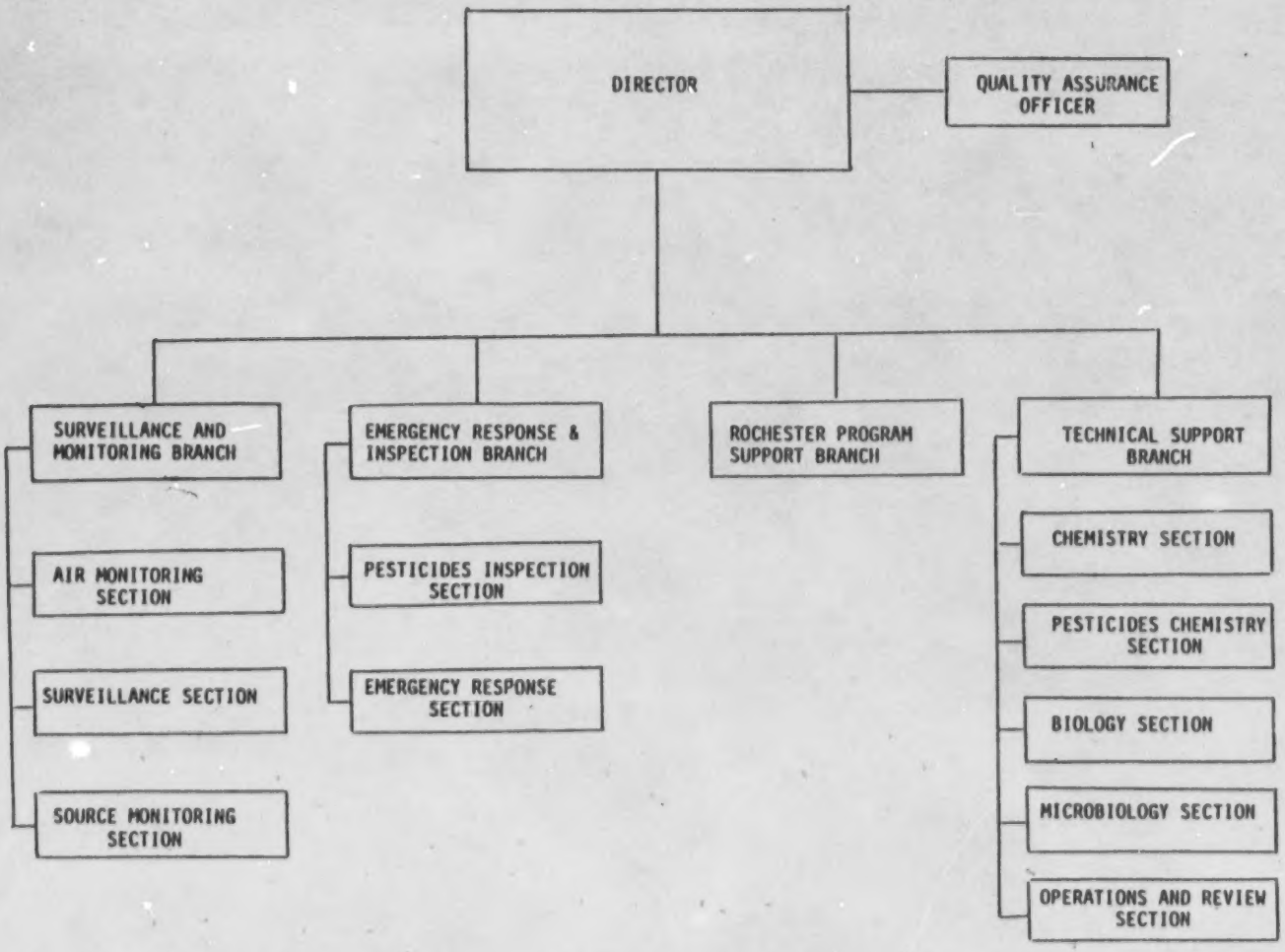


Figure 4 ORGANIZATION OF THE FACILITIES TECHNOLOGY DIVISION

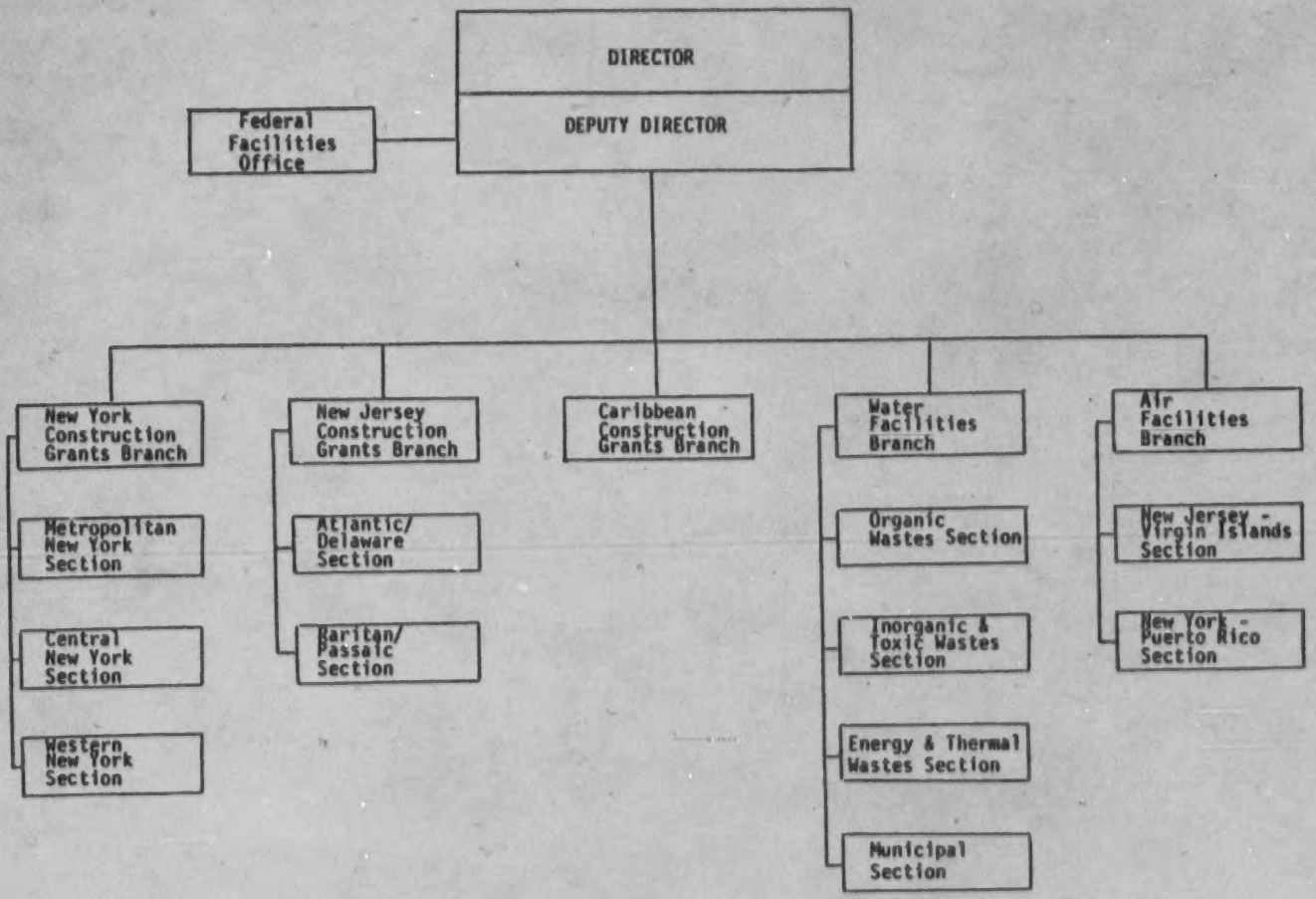
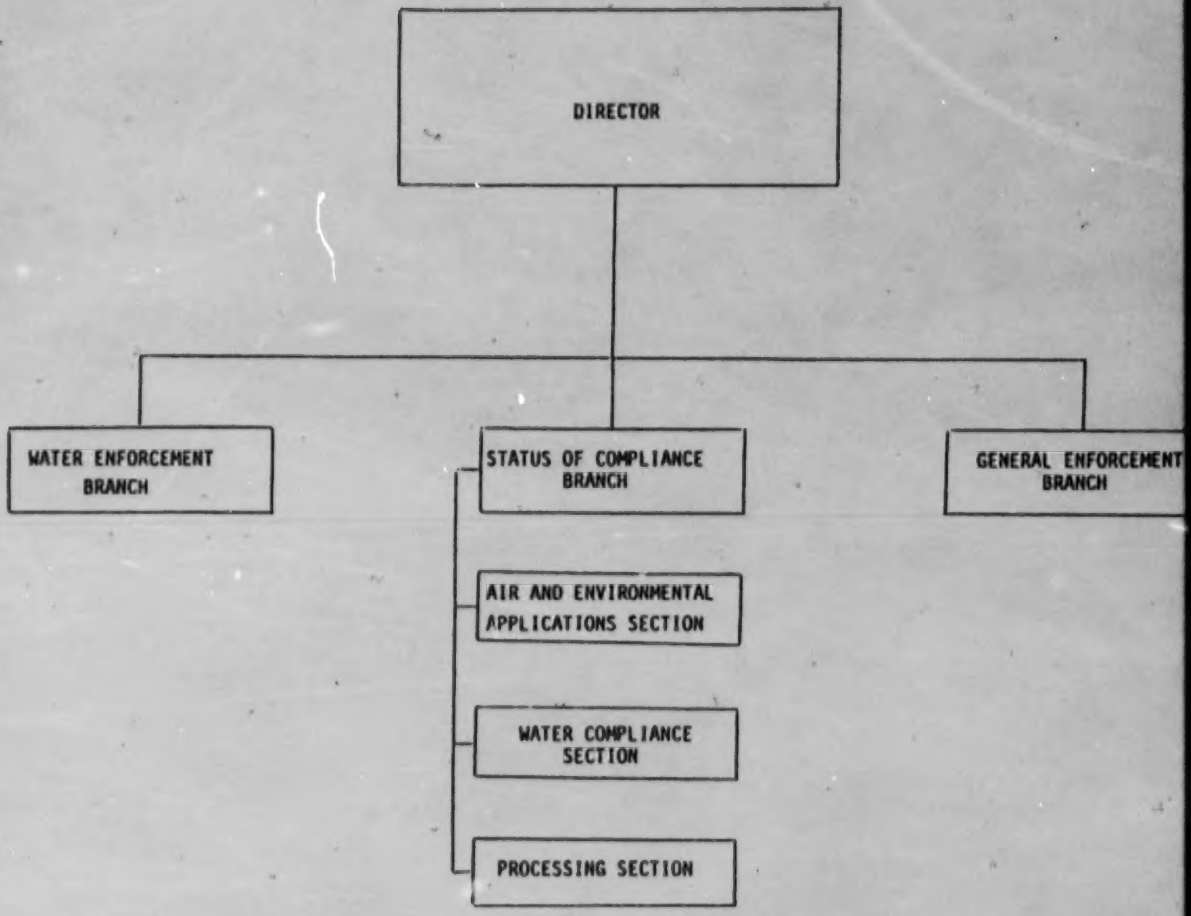


Figure 5 ORGANIZATION OF THE ENFORCEMENT DIVISION



Regional Pollution Control and Abatement Programs

I. AIR

A. Workforce Profile

The Clean Air Act of 1970 established national air quality standards and gave EPA the statuatory authority to curb pollution from both stationary and mobile sources. The law required each state to prepare an implementation plan to meet the national air quality standards and gave EPA the authority to approve or reject these State Implementation Plans (SIP). The air pollution control and abatement activities in Region II are concerned with carrying out these responsibilities.

Much of the activity of the regional personnel is directed toward monitoring pollutant sources, review and enforcement of state plans and control pollutant emissions from new sources. To oversee these functions, sixty people are currently working in air programs. These persons are divided among the four operational divisions in the regional office. The Enforcement Division primarily utilizes lawyers and clerical personnel for the performance of its mission. The Surveillance and Analysis Division has the majority of the air program's scientists, most of whom are chemists, while the Environmental Programs and Facilities Technology Divisions chiefly employ engineers and technicians. Most of the positions classified as "Other" in the following table provide clerical support to the program; however, planners are included in this classification. They have four-year degrees in specific areas such as transportation and community planning.

TABLE II

U.S. EPA REGION II

Current (1976) Air Pollution Control Staffing Level

Position	1976
Engineer	15
Attorney	5
Scientist	12
Technician	5
Other	23
TOTAL	60

Since all positions in the regional office are classified under the federal civil service, specific minimum requirements for each position have been established and must be met. The attorneys and scientists must hold degrees in their respective fields and the scientists must have, as a minimum, a bachelor's degree in the physical sciences or a related field. The technical positions require only a high school degree, even though many of those employed as technicians have some college training.

B. Workforce Projections

Current projections indicate a moderate increase in the number of persons required in the air pollution abatement and control program over the next five years. As indicated in Table III, the total increase should be at a rate of about seven percent per year, with most of the demand occurring for engineers.

Several factors account for this projected increase which is based primarily on estimates given by professionals working in the

Regional Office. First, priority emphasis will be placed on two programs in the immediate future, the revision and enforcement of SIP and the control of toxic non-criteria pollutants. Secondly, recent federal legislation requires more dependence on the use of coal as an industrial fuel. The adequate administration of these programs will require additional personnel in the region.

Turnover among personnel in the air program has been unusually high, about fifty percent, in the past year. This is accounted for by the fact that there had been little turnover for several years prior to this and several people left for better paying positions in private industry. This is stabilizing and future turnover is expected to be very low. Generally, the federal salaries are higher than those for comparable positions in the region's states, but lower than those in private industry. The following table shows workforce projections, by position, for the next five years:

TABLE III

U.S. EPA REGION II

Air Pollution Control
Projected Staff Growth Rates to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum growth/ decline (av.)
Engineer	15	17	18	19	20	21	7%
Attorney	5	5	5	6	6	6	4%
Scientist	12	13	13	14	14	15	5%
Technician	5	5	6	7	7	8	10%
Other	23	23	25	25	28	28	4%
TOTAL	60	63	67	71	75	78	6%

C. Training and Certification

Training air program personnel in the region is accomplished through various methods. Although no formal on-the-job training program exists, new personnel are informally trained in agency procedures by their co-workers.

Several formal "short courses" are offered to employees through EPA's Air Pollution Training Institute, which is located at Research Triangle Park, North Carolina. The courses and seminars which are designed primarily for professionals working in air pollution control are often offered in the region and help to bring the regional personnel, as well as others, up to date on technical advances in the air programs. In addition, employees are encouraged to take graduate or other college training which will contribute to their professional advancement. Several employees in the Region II office are taking advantage of this opportunity.

D. Career Potential

The career potential in air pollution programs in Region II can be expected to show a small increase over the next few years. The greatest demand will continue to be for those individuals with engineering or scientific backgrounds. While there will continue to be a need for technical people without a college degree, it appears that this will result in few additional jobs since available positions are being filled through the promotion of in-house staff.

As the federal government continues to give increasing responsibility to the states, there will be more career potential at that level. In particular, there will be a significant need for planning, such as transportation control planning, by the states, and this could very well be the area where the best job opportunities are located. These positions would probably require an advanced degree in highway or transportation planning.

E. Conclusion

It appears that opportunities for careers in air pollution control with the federal government in Region II are somewhat limited since most of the regional responsibility lies in the monitoring, review, and enforcement of state programs. Generally, the professional people employed in the field have backgrounds in engineering or the physical sciences, with little specific training in air pollution. This is not likely to change dramatically in the near future, and there is an abundance of qualified persons in the workforce. With the trend toward limiting the size of the federal government and the shifting of responsibilities to the states, along with budget constraints, the job potential looks brighter in the state and local governments and in private industry.

II. NOISE

A. Workforce Profile

Noise pollution, as an environmental problem, was addressed in the Clean Air Act of 1970,which authorized an Office of Noise Abatement and Control within EPA. The efforts of this office led to further recognition of the environmental noise problem and resulted in the enactment of the Noise Control Act of 1972. This law established EPA as the lead agency in the areas of noise research and control.

EPA's responsibilities under the law include developing and publishing information on noise levels, coordination of all federal noise control programs, setting standards of noise emission for various products such as electronic equipment, engines, and machinery used in construction and transportation, and requiring the labeling of consumer products as to their noise-generating characteristics or their effectiveness in reducing noise. In addition to EPA, several federal agencies have some jursidiction over noise pollution. Particularly significant are the Federal Aviation Administration, which has the authority to set standards for aircraft noise, and the Department of Labor, which, under the Occupational Safety and Health Act of 1970, can set occupational noise standards. Also, the Departments of Transportation, Housing and Urban Development, Defense, Commerce, Interior, Health, Education and Welfare, Treasury, the General Services Administration, and the National Aeronautics and Space Administration have limited responsibilities in noise research or control.

As opposed to most environmental programs, EPA's role with state and local governments in noise control is limited to providing technical assistance. No grant program exists to initiate or support programs at the state or municipal level, so these agencies must find the funds to support any programs they may have. This may account for the relatively small numbers of people working in noise control in the states. Even at the federal level, EPA's activities have been severely limited because of resource constraints.

Much of EPA's activity at the regional level consists of providing assistance to state and local governments through training of personnel, selection and operation of noise abatement equipment, design and preparation of regulations, enforcement, and dissemination of information. In the Region II EPA office, noise control is handled by a Regional Noise Representative who is responsible to the Director of the Environmental Programs Division. Three people are currently working in the noise program in the regional office. The Regional Noise Representative is an environmental engineer and working with him are a physicist and a part-time student aide.

TABLE IV

U.S. EPA REGION II

Current (1976) Noise Control Staffing Level

Position	1976
Engineer	1
Scientist	1
Other	1
TOTAL	3

B. Workforce Projections

Because of budget constraints and the nature of EPA's relationship in noise control with state and local governments, projecting workforce demands at the regional level is a difficult task,at best. The planning documents prepared by the Region II office indicate a pattern of no growth in the immediate future, and any forecast of what growth may occur over the next five years in specific job categories would be mere speculation.

Nationally, EPA hopes to increase its efforts in reducing noise pollution. Emphasis will be placed on the coordination of federal research, improvement of policies and programs for noise research materials, increased enforcement, product labeling, and demonstration programs. Most of these are continuations of ongoing activities and will result in only a small increase in the regional workforce.

The one program with far reaching implications for the noise-related workforce is that of demonstration programs. EPA plans to implement two new demonstration programs when additional personnel resources become available. They may be started as early as Fiscal Year 1978. The two, the Quiet Communities Program and the Each Community Helps Others (ECHO) would complement each other. Under the Quiet Communities Program, a limited number of demonstration communities would be chosen nationally and a close working relationship established between the EPA Regional Office and these communities in the development of model noise control programs. Half of the communities would be assisted in the development of comprehensive noise control programs while the other half would be assisted in developing programs

in a specific area of noise pollution such as construction site noise or vehicle noise.

The ECHO Program would provide direct person-to-person technical assistance to communities with problems similar to those of the demonstration communities in the Quiet Communities Program. This program would involve sharing experience and personnel to enact strong noise control programs in local governments throughout the country. It is anticipated that these programs will reduce the need for federal grant assistance and they recognize the fact that the federal government does not have the personnel resources to provide direct technical assistance to each community.

If implemented, these programs will require additional trained personnel in the regional office as well as in the states and local communities, although professionals in the region are unable to predict accurately at this time the numbers of people or levels of training required.

C. Training and Certification

Positions in noise control and abatement normally require a four-year degree as a minimum, usually in engineering or a science such as physics. Normally this has been accomplished through the general programs offered in colleges and universities with minimal training in specific disciplines of noise abatement and control. Because of the small number of persons involved at the Region II office, no in-house training is done for new employees. The regional office does informally provide training to state and local

governments on noise control procedures through individual technical assistance and publications. Formal training is impossible due to the budget and personnel constraints in the region.

D. Career Potential

Career potential in noise control should be greater at the state and local level and in private industry over the next few years than in the federal government. Since EPA's role is limited to providing assistance to states, the number of jobs created at the regional level will remain relatively small. Generally, a four-year degree will be required with some specialized training in noise abatement and control or advanced training desirable. Some technical positions may possibly be created if the resources become available to implement new programs.

E. Conclusion

The mission of EPA in the abatement and control of noise pollution is one of assistance, research and coordination. Most of the functions can be administered centrally, limiting the size of the necessary work-force in the region. The federal government encourages the states and municipalities to take the lead in noise control activities, which will have the effect of shifting the public job potential to those sectors. However, funding necessary to operate such programs adequately has generally not been available at any government level, resulting in a very slow growth in noise programs. The real potential in noise control should be in private industry, where the ever-increasing numbers of

products subject to regulation and the increased emphasis on product labeling will require manufacturers to devote more attention to the noise polluting characteristics of their products.

III. PESTICIDES

A. Workforce Profile

The federal government has been involved in the control and regulation of pesticides for more than sixty years. Although early laws recognized the potential hazards of pesticide misuse, the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) of 1947 first gave the federal government substantial authority over the control of pesticides. The Department of Agriculture had the primary responsibility under this law for pesticide regulation until 1970 when responsibility was shifted to EPA. The 1947 law provided for federal registration of pesticides available in interstate commerce. In 1972, FIFRA was amended to give EPA broader authority, including the registration of pesticides in intrastate commerce. The amended law also allows for the classification of pesticide uses and the certification of applicators.

In the regulation of pesticides, the role of EPA can be divided into two objectives: supply control and use control. Supply control includes the initial registration, re-registration and renewal of pesticides meeting the minimum standards set by EPA, the removal of products which do not meet these standards and the enforcement of registration decisions. Use control includes the regulation over the use of hazardous pesticides, establishment of standards for applicator certification, and the authority to review and approve state plans for training and certification of operators.

Although EPA is the primary federal agency responsible for pesticide regulation, other agencies have important responsibilities. The

Department of Agriculture advises and assists farmers in the selection of pesticides and other pest control methods, the Food and Drug Administration enforces EPA standards for pesticide residue on food and feed crops, and the Occupational Safety and Health Administration works with EPA to protect farm workers from adverse effects of pesticide use.

Because of the widespread use of pesticides in American agriculture, the workforce in this area is the largest of the environmental programs. In Region II, tens of thousands of farmers are pesticide applicators and many of these will have to be certified under the law. Thousands of additional workers in the region, such as exterminators, are employed as commercial applicators. Compared with the private sector, public employment in pesticide programs is relatively small. Within EPA there are fewer than one thousand persons working on pesticides nationally and most of them are located in Washington, D.C. Only about one out of every five jobs is located in the regional offices.

In the Region II office there are 31 persons working in pesticides, as indicated in Table V below. These persons are located in the Environmental Programs and Surveillance and Analysis Divisions. The professional employees are degreed individuals with backgrounds in the physical sciences, principally chemistry. In Table V, the Scientist category is composed of chemists, consumer protection specialists and environmental protection specialists, while the "Other" category contains administrative and clerical personnel. Requirements for consumer and environmental protection specialists are

four-year degrees in the physical or agricultural sciences. The mission of the regional office consists of providing assistance to the states in developing programs for applicator training and certification, inspections, and enforcement of regulations. The office is not involved to a great extent in registration since this program is centralized with most of the activitiy in the headquarters office in Washington.

TABLE V

U.S. EPA REGION II

Current (1976) Pesticide Workforce Staffing Level

Position	1976
Scientist	20
Technician	2
Other	9
TOTAL	31

B. Workforce Projections

Several factors point toward substantial growth in personnel in the pesticides program program during the next few years. As the review of state plans for applicator training and certification are completed, increasing emphasis will be placed on enforcement and inspection activities. Although the states are expected to increase their own enforcement activities, EPA will have to provide them with the support necessary to ensure the effective enforcement of FIFRA. This translates into more trained personnel, primarily scientists, in the regional office to supplement state activities. Two other priorities in Region II will be the emphasis on proper use of restricted

pesticides and the disposal of pesticides and pesticide containers. Both of these activities may require additional personnel, with the expectation that technicians will be hired for these positions.

Other programs which are expected to affect the growth in pesticides are the Toxic Substances Control Act and Integrated Pest Management. Congress recently enacted the Toxic Substances Law and it is still uncertain what the role of the pesticides program will be in the administration of it. In the region, it would probably require increased enforcement personnel. However, no accurate projections concerning proposed staffing levels are currently available.

Integrated Pest Management (IPM) is emerging as the major form of pest control in the United States. It encourages the maximum use of natural controls of pests such as cultural methods, pest diseases, sterile insects, resistant crop varieties and pest predators. This program will require careful monitoring of pest control methods and the knowledge of which technique or combination of techniques is most effective. A 1972 study by the Department of Agriculture estimated that if fully utilized in Region II, IPM had the potential for employing over 2,350 people in New York and 280 in New Jersey. These people would be trained as crop protection specialists and field scouts. Before this kind of growth can occur, IPM must gain a greater degree of acceptance, particularly among farmers. Economic benefits of IPM must be demonstrated to them to reduce their fears of crop loss.

The growth in pesticides is estimated by the professionals currently working in the program to occur at a rate of approximately ten percent per year. This increase should be at the professional,

technical, and clerical levels with the largest increase in technical positions, primarily in inspection programs. Growth in the professional jobs will continue at a slower rate and a small increase will occur in clerical positions in support of the program; the following table depicts the annual growth rate, by position, to 1982:

TABLE VI

U.S. EPA REGION II

Workforce Projections to 1982 for Pesticides (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum growth (average)
Scientist	20	22	23	25	26	28	7%
Technician	2	2	4	4	6	7	33%
Other	9	10	10	12	13	15	11%
TOTAL	31	34	37	41	45	50	10%

C. Training and Certification

With the enactment of FIFRA, the responsibility for the training and certification of pesticide applicators was placed upon the states. Following the approval of all state plans by October, 1977, the emphasis will be on re-certification and upgrade training. Again, these will be the responsibilities of the states. The federal role will be that of providing assistance to the state through financial, personnel and technical resources. EPA currently provides training in several pesticide subjects such as the safe use of pesticide products, environmental problems associated with pesticides, and pesticide poisoning. These courses are available to federal, state, and local personnel working in pesticides as well as those in private industry.

Informal on-the-job training is provided for personnel of the Pesticides Branch of the Region II office. The purpose of this training is to familiarize new personnel with office procedures and the federal pesticide regulations. Professionals in the region feel that a more formal, intensive training program is needed for field inspection personnel.

The greatest potential for training in the pesticide program would appear to be in IPM. The federal government has initiated programs to promote the development and use of IPM, including those to promote training of professional pest managers. The speed with which IPM will be implemented throughout the country remains dependent, however, on the acceptance of it by the states, private industry, and the individual farmers.

D. Career Potential

Opportunities look good over the next several years for careers in pest management. Several of these jobs will continue to require a college degree in one of the physical sciences. However, there should be significant potential for those with technical training, especially in the inspection programs. The increased usage of IPM could create a demand for thousands of additional, specifically trained persons. As previously mentioned in Section B, a Department of Agriculture study done in 1972 indicated the potential manpower requirements for IPM to be more than 2,350 persons in New York and over 280 in New Jersey. No figures were available for Puerto Rico or the Virgin Islands. Most of the demand in IPM would be for persons trained as

field scouts, requiring a high school education with some knowledge of entomology. These scouts would be trained to identify and measure detrimental and beneficial insect levels. There would also be some demand for professional crop protection specialists with strong backgrounds in the physical sciences and an understanding of the economic and environmental impacts of pest control. The Agriculture Department based its figures on one field scout per 2,000 acres of cropland and one crop protection specialist per 30,000 acres.

If EPA is successful in transferring most of the responsibility for pest control to the states, the potential for jobs will be in state government and private industry. Opportunities at the federal level can be expected to stabilize once the initial registration and approval of state programs have been completed. Most of the federal activity will be in enforcement and inspection.

E. Conclusion

EPA's responsibilities in pest control consist of the registration of pesticide products, regulating use of hazardous pesticides, establishment of standards for applicator certification, review and approval of state plans for training and certification, and enforcement. Most of these activities are controlled through EPA Headquarters in Washington with the regional offices being responsible principally in the areas of enforcement and review of state plans.

Pest management is a growing program because of the increasing number of products in use and the emergence of new approaches such as IPM. While the federal government will continue to set standards

for pesticide products and their use and enforce these standards, the states are being encouraged to assume increased responsibility in assuring the proper use of pesticides and the development of comprehensive pest management programs.

IV. POTABLE WATER

A. Workforce Profile

The mission of the water supply or potable water program is to ensure that all public water supplies provide safe and sanitary drinking water to all citizens. The federal government instituted a program to improve the quality of drinking water with the passage of the Safe Drinking Water Act (SDWA) in 1974. EPA's responsibilities under the Act include the establishment and enforcement of National Primary Drinking Water Regulations, assistance to the states through federal grants, and the establishment of a program to protect underground sources of drinking water. Each public water supply is required to monitor, test and otherwise operate in compliance with the regulations and the states are encouraged to assume maximum responsibility for the implementation and enforcement of the regulations. The water supply program and SDWA are aided in these efforts by the Federal Water Pollution Control Act which sets water quality stnadards and controls the release of pollutants into the water systems.

The Water Supply Branch in Region II is located in the Environmental Programs Division and is concerned with working with states and the water supply facilities in carrying out the provisions of SWDA. This is done through technical assistance, financial assistance, training of state and local personnel, and review of environmental impact statements. EPA has delegated the authority to the regional office for state assistance and granting state primacy under SWDA.

Since current activity is directed toward helping the states assume primacy, the Water Supply Branch has a small in-house staff. Of the eight people working in the Branch, seven are engineers and one is a technician. The engineers have degrees in sanitary or civil engineering while the technican is not degreed but has experience in engineering technology.

B. Workforce Projections

Professional estimates indicate that the workforce in water supply in Region II will increase at a rate of about one person per year over the next five years. Although the result is an overall increase of over fifty percent, the program will remain small in the number of actual in-house personnel, probably numbering no more than thirteen. The types of positions available and the training required is not expected to change from current requirements, as indicated in Table VII below.

TABLE VII

U.S. EPA REGION II

Workforce Projections to 1982 for Potable Water (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum growth (avg.)
Engineer	7	8	8	9	9	10	7%
Lab Technician	0	0	1	1	1	1	n/a
Technician	1	1	1	1	2	2	n/a
TOTAL	8	9	10	11	12	13	10%

The basic reason for the relatively small increase in personnel is that EPA intends to certify all states for primacy under SDWA. If this were to happen, EPA's role in the region would be limited to monitoring and enforcement.

Several factors are affecting state decisions on primacy. The financial constraints seem to be the largest factor. States are required to have the resources for implementation and enforcement of the program before primacy can be granted. Other factors include the lack of trained personnel and the disagreement with or misunderstanding of the program. According to the professionals working on the program in the Region II office, the prospects for assumption of primacy are rated as good for New York and the Virgin Islands and fair for New Jersey and Puerto Rico. The decisions in all these states may depend on the amount of federal funding available to them once primacy is assumed. The regional office is preparing a contingency plan in the event that a state or states do not assume primacy. The estimate is that if New Jersey alone does not accept primacy, it would require an additional 26 persons in the regional office to administer the program for that state.

Another program which will place additional responsibility on the regional program personnel is Underground Injection Control (UIC). SDWA mandates a separate program to prevent the contamination of underground sources of drinking water from uncontrolled injection of fluids. The law provides for the same kind of program in UIC that it required for public water supplies, including the intent of state assumption of primacy. Since EPA has only recently proposed

regulations for UIC, the program is just now getting underway with the bulk of the activity to be located at the regional level. Additional persons may be necessary for this program in the future if state primacy is not assumed although no figures currently are available to indicate how many positions this may require.

C. Training and Certification

Because of the small number of personnel in the water supply program in Region II, no formal training is done by the regional office. New persons in the program are given informal on-the-job training through working relationships with others in the program. Personnel are also encouraged to take advantage of job related courses or advancement training offered by local colleges and universities.

The Office of Water Supply at EPA Headquarters in Washington has developed a comprehensive program of training activities designed to support the implementation of SDWA. The program utilizes a three phase approach: Phase I provides the regions, states, and operators with the skills and knowledge required to carry out their responsibilities under SDWA; Phase II is directed toward technical assistance and program requirements of states and water supplies; and, Phase III addresses the long-range support of the program.

Several methods will be employed in the operation of these courses including programmed instruction, seminars, workshops, demonstrations and audio visual instruction. It is expected that the training programs will be implemented by the states under their

assumption of primacy for SDWA. The regional office will have the responsibility to provide assistance and support to the states and to monitor operation and performance. The Office of Water Supply in Washington will provide the materials and resources to the regional office and will train the regional staff to conduct further training. It is hoped that through this type of program, training can be provided to all persons involved in water supply including federal, state, and local personnel and water supply facility owners and operators.

D. Career Potential

The outlook for careers in water supply programs at the federal level does not appear very promising. Because current expectations are that the states will assume the responsibilities for implementation of the water supply activities, federal activity will be phased down with few new positions being created. If this occurs, demand for trained and experienced personnel will be at the state level. A need will also exist for trained persons in private water supply facilities since they must also comply with the provisions of SDWA. One of the major roles the federal government will play will be that of providing the training for these individuals.

Any demand that does exist at the federal level will be for personnel trained in engineering or the physical sciences. Little opportunity will be available for those with other backgrounds. However, if states do not assume primacy and the regional office must implement SDWA, a significant need for personnel will exist, including opportunities for technicians.

E. Conclusion

The water supply program in Region II is directed toward the implementation of the Safe Drinking Water Act. The regional office provides assistance, both technical and financial, to the states to help them gradually assume full responsibility for administration of the program. Once this is accomplished the region's activities will be primarily the monitoring of the program and enforcement of regulations.

EPA maintains only a small in-house staff in the region to carry out the water supply activities. Since the hope is that states will assume more and more responsibilities, the level of staffing in the regional office is not expected to grow significantly. Real growth in the program will occur at the state level and in private water supply facilities. However, the UIC program will require a considerable effort at the Regional level if the Primary program is any indication of UIC state efforts. Finally, the water supply program is attempting to integrate itself into 208 planning to ensure waste management plans which will not adversely affect water supplies in the Region. This effort may result in an increased level of required effort and resources; however, the workforce implact on Region II EPA's water supply program is indeterminable.

V. RADIATION

A. Workforce Profile

EPA has the responsibility for formulation, execution, and coordination of a federal program to control radiation. The objective of the program is to balance the adverse effects of radiation exposure with the benefits to be derived from it. EPA's responsibilities are not limited to the environmental aspects of radiation but include medical X-ray and occupational uses of radiation as well. The program covers both ionizing radiation such as that produced from nuclear power plants, medical X-rays, and naturally occurring sources like mining, and non-ionizing radiation emitted from radio and television transmitters, radar, and microwaves.

Responsibility for radiation control is shared by EPA with several other federal agencies including the Nuclear Regulatory Commission, and the Department of Health, Education and Welfare. EPA's authority in radiation is derived from several federal laws, including the Federal Water Pollution Control Act Amendments, the Safe Drinking Water Act, the Clean Air Act, the Marine Protection, Research and Sanctuaries Act, and the Atomic Energy Act. Most of the authorities lie in issuing standards and providing technical assistance. Enforcement responsibility is limited to drinking water standards, ocean dumping, and discharge permits for release of radioactive materials into navigable waters.

In the control of radiation from nuclear power plants, the Region II office has three primary functions. The first function is the review of Environmental Impact Statements (EIS) for power plants. The second is the monitoring of releases at power plants in the Region through Environmental Radiation Ambient Monitoring System (ERAMS), state monitoring program, and through utility monitoring programs. The third function is the assistance provided to the states to minimize the consequences of a nuclear accident. There are currently eight commissioned nuclear plants in the Region with approximately twelve more in the construction or planning stages. Another major activity involves the Region's role as project officer for all EPA field studies at the West Valley Radioactive Waste Burial Site. Other activities in the Region include the monitoring of medical X-rays used in federal facilities and of occupational exposure to radiation.

To administer the radiation program, the Region II office has a Regional Office of Radiation Program located in the Environmental Programs Division. Three people currently work full-time in radiation; the staffing consists of a nuclear engineer who heads the office, a health physicist and a clerk/typist. Both professionals have advanced degrees in their respective occupations and have had additional training in radiation protection provided by EPA.

B. Workforce Projections

Growth in the Radiation Program will occur principally in three areas: nuclear power, radioactive waste disposal, and control of

radiation from naturally occurring sources. Nuclear power and radioactive waste disposal go hand in hand since the growth of this industry is expected to account for the vast majority of future radioactive wastes produced. Although no regulatory program exists at present to control naturally occuring radiation, EPA's objective is to establish standards for the control of this source of exposure in the immediate future. This is the largest single source of population exposure to radiation and the only source that has not received extensive study.

In Region II, nuclear power will have a significant impact in the near future. Eight nuclear plants have operating licenses within the region. The twelve additional plants in planning or under construction will require EIS reviews for construction permits or operating licenses. Therefore, this increase in the number of plants will create an increased workload in the regional office in EIS review.

Other regional priorities include the development of standards and criteria for siting, licensing, and operating radioactive waste disposal sites. To adequately carry out these responsibilities, the regional office estimates that the program will have to increase to about six positions over the next five years. There will continue to be a need for persons with strong engineering backgrounds, particularly in nuclear engineering. Scientists, such as health physicists, geologists, and hydrologists will also be in demand. A need exists for a technician program to utilize nuclear

technicians, however, the establishment of such a program is not anticipated in the near future. Table VIII indicates the projected growth.

TABLE VIII

U.S. EPA REGION II

Workforce Projections to 1982 for Radiation (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum growth (avg.)
Engineer	1	1	2	2	2	2	30%
Scientist	1	1	1	1	2	2	20%
Other	1	1	1	1	1	1	0%
TOTAL	3	4	5	5	6	6	

C. Training and Certification

The EPA Region II Radiation Program offers several radiation training programs in nuclear emergency response planning to the states in Region II. Additionally, EPA's Office of Radiation Programs in Washington, D.C., co-sponsors an interagency course on emergency response planning conducted at the Defense Civil Preparedness Agency Staff College in Battle Creek, Michigan, and coordinated by the Nuclear Regulatory Commission (NRC). EPA's headquarters also sponsor direct training in EIS review. In addition to this course, EPA offers a variety of films and self-instructional materials to state and local governments on radioactive waste disposal and non-ionizing radiation surveys.

The bulk of the training programs in radiation are conducted by the NRC. Direct training and assistance is provided by NRC to the

states through its Agreement States Program whereby a state can assume regulatory authority over nuclear materials in quantities not sufficient to form a critical mass. Before granting this authority, NRC must determine that the state's radiation program is adequate to protect public health and safety and compatible with NRC's program. Once a state is given agreement status, NRC conducts extensive training for state personnel to assure that the program is kept up-to-date in current technology on radiation control. In Region II, only New York is an agreement state. NRC also provides training to state agencies that assist NRC in the long-term sampling to evaluate licensees' overall environmental programs. Currently, New York and New Jersey are participating in this program.

D. Career Potential

Although the radiation program in the Region II EPA office is expected to double in terms of workforce, only three additional positions will be created. Because of the small number of people involved, future demand will tend to be for the same types of individuals that are currently employed. Backgrounds in nuclear engineering, health physics, geology and hydrology will continue to be in demand. Professionals in the field believe that a need for technicians trained in nuclear technology exists but because of the limited involvement of EPA in radiation, and budget constraints, it is unlikely that any opportunities for technicans will develop in the next few years.

The potential for careers in radiation will depend at least partially on the future of nuclear power facilities. At the current rate of increase, these power plants can be expected to provide a large number of jobs for nuclear engineers, scientists and technicians. The expansion of nuclear power will also affect the number of jobs available in radioactive waste disposal since much of this waste in the future will be generated by nuclear facilities. Most of these jobs will be in the public sector. The potential exists for the creation of jobs in the mining industries, following the establishment of standards for the control of naturally occurring radiation.

E. Conclusion

EPA's responsibility in radiation control is the formulation, execution, and coordination of federal programs for the protection of health and environment. Much of this responsibility is carried out by establishing standards and guidelines, recording and reporting of data, providing technical assistance to the states, and review of environmental impact statements. Most of the enforcement activities are administered through other federal agencies such as NRC, although EPA does have enforcement authority in the areas of drinking water, ocean dumping and discharges into waterways.

In Region II, the great increase of nuclear power facilities in the next ten years along with problems associated with existing radioactive disposal sites could substantially increase the workload of the regional office. This, plus the development of

standards of X-ray exposure, is estimated to require a doubling of the current workforce level. Future careers will tend to be limited to persons with professional training.

VI. SOLID WASTE

A. Workforce Profile

Although federal recognition of solid waste as an environmental problem began in 1965 with the enactment of the Solid Waste Disposal Act, a strong program to encourage solid waste management is just beginning. Comprehensive federal programs in air and water pollution control have had the effects of closing down incinerators and land disposal sites while creating an increased amount of sludge and other pollution treatment residues. The original act was amended first in 1970 by the Resource Recovery Act and, most recently, by the Resource Conservation and Recovery Act of 1976.

This new law requires states and regional waste management agencies to develop solid waste management plans since this is a program which is best managed at the state and local level. This law also requires that standards be developed for the control of hazardous wastes and that permits be issued to owners and operators of facilities for the treatment, disposal, or storage of hazardous wastes. Other provisions include programs of research and development, demonstration projects in solid waste technology, and financial assistance to states for the establishment and implementation of solid waste and hazardous waste management plans.

EPA is currently approaching solid waste management from three distinct directions: elimination of the adverse health and environmental effects of improper waste disposal on land, promotion of the recovery of energy and materials from wastes, and waste reduction.

The elimination of adverse effects is chiefly a regulatory function and the Resource Conservation and Recovery Act provides the necessary regulatory authority to the states as well as eliminating a major cause of these adverse effects--open dumps. One of the principal functions of the Region II office is providing technical assistance to the states in the control of waste disposal. There are over 1,000 sanitary landfills in New York and New Jersey alone. Technical assistance is also provided to local governments, private organizations, and individuals.

Resource recovery is a program receiving increasing emphasis within the region. EPA has supported resource recovery mainly through grants to state and local agencies for the planning and implementation of demonstration projects. Region II currently has six resource recovery projects in the planning or construction phases, although there are none currently operating. These projects appear to be feasible in the region because of the large urban areas which produce the quantities of waste required to make them operate economically. This program is not without its problems, however, the primary one being that of finding readily available markets for recoverable materials. In addition to resource recovery projects, EPA has sponsored programs to encourage materials separation and separate collection of waste programs to promote recycling.

In waste reduction, EPA's efforts have concentrated on two areas, returnable beverage containers and voluntary waste reduction. EPA has issued guidelines establishing mandatory deposits on beverage containers sold on federal facilities. Even though some states have enacted mandatory deposit laws, no state in Region II has done so as yet. Voluntary waste reduction is handled by research leading to the

incentive for production and use of reusable products as opposed to disposable products.

The Solid Waste Branch in Region II is located in the Environmental Programs Division and employs four people. The director of the Branch is a sanitary engineer and working with him are a secretary and two scientists; one a physical scientist and the other an environmentalist. Most of the activity of the Branch is concerned with assistance to the states in the form of technical assistance and planning grants. They also work closely with federal facilities in the region in the promotion of recycling and the elimination of unnecessary wastes. In 1977, much effort will be spent in assisting the Headquarters Office of solid waste in the development of RCRA regulations.

B. Workforce Projections

Workforce in Solid Waste in the regional office is expected to increase significantly in the next two years according to the professionals currently working in the program. The major reason for this increase is the passage of the Resource Conservation and Recovery Act. To carry out the provisions of this law, the regional office must assist the states in the development and implementation of state and regional waste management plans, enforce standards for disposal of hazardous wastes and ensure that open dumps are phased out by 1983. The program managers have requested three additional persons for 1977 and seventeen additional persons for 1978 as a result of the new law. They realistically expect two or three additional persons in 1977 and then more in 1978.

It is anticipated that the personnel hired for these positions will be engineers (primarily chemical engineers) and scientists (primarily chemists). Their function will be to bring the state programs into compliance with the federal requirements. The professionals in the program have indicated that the large staffing increase may be temporary since once the state waste disposal plans are in full operation few federal employees will be needed to provide assistance. It would be some time, however, before these positions could be phased out, with the minimum estimate being at least two years, probably longer. In Table IX it is assumed that all the positions will be retained through 1981.

Another program which may impact growth in the solid waste program is the implementation of the Toxic Substances Control Act. Since final determinations have not been made as to how the Act will be administered, no projections are available on the number of people required in the Solid Waste Branch over the next five years for toxic substances programs.

TABLE IX

U.S. EPA REGION II

Workforce Projections to 1982 for Solid Waste (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum growth (avg.)
Engineer	1	1	7	7	9	9	126%
Scientist	2	3	8	8	8	8	43%
Other	1	1	2	2	3	3	30%
TOTAL	4	5	17	17	20	20	57%

C. Training and Certification

There are no formal training programs in solid waste conducted by the regional office. Training requirements are met through individual on-the-job training and participation of personnel in programs available through local universities. Because of the small number of persons currently working in the office, this training is estimated to be adequate although professionals in the program would like to see courses offered by the Office of Solid Waste Management in Washington. With additional personnel being hired as a result of the Resource Conservation and Recovery Act, the needs for formal training programs can be expected to increase. Although no formal training program now exists, the Solid Waste Branch hopes that such a program can be instituted by 1978,when the personnel level is expected to increase.

D. Career Potential

It is unlikely that any new careers in solid waste management will emerge in the immediate future. The potential for jobs is, however, moving in the direction where careers will be more technical and require more education and specialized training. Open dumps and incinerators will be virtually nonexistant in a few years, replaced by modern facilities such as resource recovery recycling plants, and hazardous waste facilities. The operation of such facilities will require an increasing number of engineers, scientists, and technicians trained in resource recovery and waste management.

VII. WASTEWATER

A. Workforce Profile

Most of the pollution in waters of the United States originates from one of two sources, industry or communities, although non-point sources also pose substantial problems. To control this pollution, the federal government enacted the Federal Water Pollution Control Act in 1956. The basic premise of the law was the establishment of a construction finance program to finance wastewater treatment projects. This law was amended in 1966 and again in 1972 and constitutes the basis of the present federal program in water pollution control.

The Federal Water Pollution Control Act Amendments (FWPCA) have as their goal the attainment of a level of water quality in the United States by 1983 that will protect aquatic life and be clean enough for swimming and other recreational use. The amendments propose to achieve this goal through a two-phase approach. The first phase, to be completed by July 1, 1977, requires that industry use the best practicable technology to control pollution, and that public treatment plants provide at least secondary treatment. By the completion of the second phase on July 1, 1983, industry must use the best available technology and public facilities must provide the best practicable technology for water pollution control.

FWPCA is administered by EPA and the states through [illegible] major programs provided by the Act, the award of construction grants and the issuance of discharge permits. Construction grant applications and environmental impact statements for wastewater treatment facilities

are reviewed, as required by NEPA, in the EPA Regional Office before the grant is given. After the award is made, the regional office monitors and inspects the construction. The National Pollutant Discharge Elimination System (NPDES), the permit program, was established by the law to regulate the amount of pollutants discharged into the waters. EPA has the responsibility to set effluent limitations on the maximum amount of pollutant that can be discharged into a body of water. While the sources of this pollution such as municipal waste treatment plants and manufacturing plants must monitor and report on the waste discharged, EPA has the authority for the issuance and enforcement of the permits. These activities are generally carried out by the regional office. Whenever possible, however, EPA delegates authority for administering these programs to the states.

Since the operation and maintenance of wastewater treatment facilities are local responsibilities, EPA has encouraged the states to become involved in both the review of construction grants and the administration of the NPDES program. In Region II these responsibilities have already been delegated to New York State. New Jersey has assumed some of the construction grant functions but has not been delegated the NPDES program. The delegation of both programs to Puerto Rico is dependent on the development of an experienced staff. The Virgin Islands has been delegated the NPDES program, but not the construction grants review. The regional office continues to have substantial responsibility over these programs and must administer them where they have not been delegated to the states.

EPA's wastewater program also has responsibility for partial administration of the Marine Protection, Research and Sanctuaries

Because the federal government has recognized the responsibility of state and local governments for waste management, those units of government will have a greater job creation potential than the federal government. The private sector, which will produce and operate most of the resource recovery and recycling plants and hazardous waste facilities, will also be a large source of future employment in waste management. When the states have implemented their waste management plans, EPA's regional activity will be limited to monitoring and enforcement, thereby reducing job potential in the Regional Office.

E. Conclusion

The current primary function of the solid waste program in Region II is to assist the states through technical help and planning grants. While only four people are now employed in the program, the recent enactment of the Resource Conservation and Recovery Act is expected to have considerable impact on employment, increasing it on an average of 57% per year. This will create an increased demand for professionals, such as chemical engineers and chemists.

With the elimination of open dumps and incinerators, waste management technology is moving towards new techniques such as hazardous waste treatment, resource recovery and recycling. These areas will provide the future career potential, with the job requirements becoming more specialized and technical. State and local governments will continue to require increasing numbers of personnel in waste collection and disposal, while growing job potential will be found in private industry in the development and operation of resource recovery and hazardous waste treatment and disposal facilities.

Act of 1972. This act, which establishes a permit program for ocean dumping and bans the dumping of radiological, chemical and biological warfare agents in the oceans, is also administered by the Commerce Department, Army Corps of Engineers, and the Coast Guard. The law is particularly significant to Region II's wastewater program since all the states and territories within the region border the ocean.

To administer the wastewater program in Region II, the EPA offices involve 279 persons. As Table X indicates, 94 are engineers with degrees in sanitary, environmental, civil, chemical or mechanical engineering. Sanitary engineers are the most prevalent and comprise more than half of the engineers in the program. Seventy-six scientists are employed in the wastewater program, including 25 chemists, 20 physical scientists, 17 environmentalists, 8 ecologists and 6 biologists. All these positions require four-year degrees in the individual discipline although, in many cases, the job specification merely requires a degree in one of the physical sciences which allows flexibility in hiring from varied educational backgrounds, e.g., a biologist could be hired as an environmentalist or physical scientist. The technician and lab technician positions do not require a college degree, but the individuals filling these positions have extensive work experience or a combination of experience and some college work. The wastewater program also utilizes 9 attorneys engaged in enforcement activities and 87 persons classified as "Other" in Table X which include clerical and administrative personnel in program support functions. The distribution of these persons within the regional office is as follows: 121 in the Facilities Technology Division, 62 in Surveillance and

Analysis, 33 in Enforcement, 27 in Environmental Programs, 27 in Management, 3 in the San Juan field office, and the remainder in the Civil Rights Division and the Regional Administrator's office. These figures include 11 positions over ceiling in the enforcement activities. The positions were intended to be temporary, although the regional office considers them to be necessary on a permanent basis.

TABLE X

U.S. EPA REGION II

Current (1976) Wastewater Staffing Level

Position	1976
Engineer:	
Chemical	3
Civil	11
Environmental	26
Mechanical	3
Sanitary	51
Attorney	9
Scientist:	
Biologist	6
Chemist	25
Ecologist	8
Environmentalist	17
Physical Scientist	20
Laboratory Technician	4
Technician	9
Other	87
TOTAL	279

B. Workforce Projections

According to estimates provided by program professionals, the number of personnel in the wastewater program in Region II is expected to increase at a rate of about five percent per year over the next five years. The increase will occur in all occupational categories with the largest occurring in the technical positions. A need for engineers and scientists will continue at a slower rate than technicians and there will be a small increase in the number of administrative and support positions. Most of the educational and training requirements will remain the same, although it has been suggested by professionals in the region that increased emphasis should be placed on management training. The following table denotes the workforce projections, by position, to 1982.

TABLE XI

U.S. EPA REGION II

Workforce Projections to 1982 for Wastewater (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum growth (avg.)
Engineer	94	99	104	109	115	121	5%
Attorney	9	9	10	10	11	11	4%
Scientist	76	80	82	86	88	92	4%
Lab Technician	4	5	6	7	8	9	18%
Technician	9	11	13	15	17	19	16%
Other	87	89	92	95	99	103	3%
TOTAL	279	293	307	322	338	355	5%

Several priorities at the national and regional level necessitate the need for increased personnel. First of all, implementation of FWPCA is moving from Phase I into Phase II. While Phase I

emphasized the issuance of permits and award of construction grants, Phase II will concentrate on other areas such as non-point source pollution and toxic pollutants. The control of non-point sources such as runoff and acid mine drainage requires development of control strategies by the states and area wide planning agencies with oversight from the regional EPA office. A toxic substance control strategy must be developed to meet the 1983 goal. Phase I has been concerned with the control of traditional pollutants but the recently passed Toxic Substances Control Act will require more effort toward eliminating toxic wastes.

In the NPDES program, permits can be granted for a duration of no more than five years. These permits have been issued to comply with 1977 requirements and when the initial permits expire, the new permits will require compliance with the 1983 standards. During Phase II, compliance monitoring and enforcement will be the major efforts in this program, and will be a high priority activity within the region.

Other areas which will receive increased emphasis within the region are ocean dumping alternatives and the control of oil and hazardous material spills. Phasing out ocean dumping will require that alternative disposal sites be available inland which will, in turn, increase the construction grants program. This, along with the review of plans for the prevention of accidental oil and hazardous material spills, will require increased manpower at the regional level.

C. Training and Certification

Despite the large number of employees in the wastewater program in Region II, no formal training program exists. One reason that may account for this is that the personnel are scattered among several different divisions in the regional office. Although the personnel are working on the same program, each division functions independently of the others. Informal on-the-job training is provided to new employees.

Training courses in specialized wastewater subjects are provided through EPA's Office of Water Programs Operations at the National Training Center in Cincinnati, Ohio. Subjects offered include wastewater treatment technology, control of special pollution problems, and chemical analysis techniques. The courses are provided for personnel of state and local governments and private industry, as well as federal government employees. The Region II office takes advantage of these courses as often as possible although limited travel funds often make it difficult to participate to the fullest extent.

D. Career Potential

Future careers in wastewater programs in the federal government will continue to require professional training. Since much of the effort will be in the general areas of technical assistance, enforcement, and review and monitoring activities, engineers will be in the greatest demand. A need for scientists and technicians will still exist, as well as a demand for administrative personnel, because of the large amount of paperwork involved in managing the program.

The greatest potential should exist at the local community level and in private industry. It is at this level that the construction grant program and the NPDES permits have had their greatest impact. With the increased number of wastewater facilities in operation, there exists a demand for trained personnel to operate and maintain the facilities in accordance with the law. State governments should also have an increasing demand for trained personnel as they take on more responsibilities in the administration of the wastewater treatment program.

E. Conclusion

EPA is entering the second phase in the implementation of FWPCA. Since the construction grant and NPDES programs are well underway, the administration of these programs can be delegated to the states to allow the federal government to concentrate on new priorities. In Region II, delegation of the programs is about half complete. New priorities will include the control of non-point pollution sources and toxic pollutants.

Wastewater is the largest of the environmental programs in the regional office in terms of workforce. Although it is hoped that the states will assume responsibility for administration of the programs, the Regional Office estimates that its personnel level will increase slightly in the next five years. The demand will continue to be for professional personnel, particularly engineers.

SUMMARY

In order to effectively achieve their goals in the next five years, each of the sevel pollution control and abatement programs covered in this study will require increased personnel resources. This is the common opinion expressed by the program managers and personnel interviewed. Overall, these persons based their projections of future growth in Region II rather conservatively, projecting figures on the number of personnel they are likely to receive rather than what they want or have requested. A total increase of 137 persons in the regional programs is anticipated. The average annual rate of program growth is approximately eight percent. In addition to the personnel in the program areas covered in this study, other personnel working in the Regional Administrator's Office, the Regional Counsel's Office, the Civil Rights and Public Affairs Offices, and Management and Enforcement Divisions, provide support activities to more than one program and cannot be classified into any one area.

A common goal among the programs in Region II is the delegation of responsibility for pollution control and abatement programs to state and local governments. The Regional personnel envision their roles as that of providing guidance and technical assistance, monitoring, reviewing, and enforcing federal regulations. To carry out these functions, staffing will be necessary in the Regional Office until such time as the states are able and willing to adequately implement the programs. If the states do not assume this responsibility, the Regional Office will have to implement the programs.

In either case, growth in Region II is anticipated to continue during the five year scope of this study.

The degree to which states are willing to assume responsibility for program implementation will have a dramatic effect on staffing levels in the Regional Office. Although in Region II the states generally have been willing to take the lead in the administration of environmental programs, several factors continue to impede the process. First of all, funding is a problem in each of the states. State budgets are limited and legislatures are looking at the environmental programs with increased scrutiny, especially when EPA will run a program if not administered by the state. Secondly, states are reluctant to initiate programs which may be politically unpopular, costly, and regional rather than statewide in nature. A direct correlation generally exists between the size of a state's program and the number of federal dollars spent on it. Thirdly, the amount of federal red-tape involved in a program often causes confusion to the states and discourages their participation. The continual revisions and changes in the laws also tend to increase skepticism in the states about the programs.

As previously indicated, the program personnel in Region II do not anticipate a large staffing increase over the next five years. The major portion of the increases will be at the professional level with the demand continuing for engineers and scientists. Opportunities will also become available for persons with technical training although the demand for technicians will not be as great as that for professionals. Turnover has generally been low in the Regional Office (about 5-10%).

with much of it occurring in the clerical positions. Federal salaries and benefits are good, especially when compared with the states, and this may account for the employment stability. The real growth is expected to occur, however, in the private sector and in state and local governments, where the bulk of the workforce will be located.

The efforts in Region II over the next five years will focus on new priorities as well as the continuation of current activities. Toxic substances, radioactive waste disposal, integrated pest management, and underground injection control are some of the programs which will be receiving priority emphasis. It is impossible to project at this time accurate workforce figures on the impact of these programs in Region II. The Regional Office is moving aggressively to resolve environmental problems and provide the guidance and assistance to the states that is necessary for the success of the programs. With the cooperation of New York, New Jersey, Puerto Rico, and the Virgin Islands, the efforts of the Regional Office will meet with continued success.

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